

## DISTRIBUTION OF ARMY ANTS (HYMENOPTERA: FORMICIDAE) IN ILLINOIS<sup>1</sup>

Mark B. DuBois<sup>2</sup>

**ABSTRACT:** *Neivamyrmex carolinensis* is reported for the first time from Illinois. This is a significant range extension since no collections of this species have previously been made from this or surrounding states. Localities are listed and a key is presented for identification of worker army ants encountered in Illinois.

*Neivamyrmex carolinensis* (Emery) is reported from Illinois for the first time. Previously, *N. nigrescens* (Cresson) was the only species of army ant known to occur within the boundaries of the state. Distributions of both species are discussed in detail below. A third species, *Neivamyrmex opacithorax* (Emery), probably occurs here as it has been recorded from eastern Missouri and Iowa (Watkins, 1985). Army ants are most frequently discovered as a raiding column of workers during twilight hours or at night. On rare occasions, these columns are encountered above ground during daylight hours on heavily overcast days (pers. obs.).

An attempt has been made to summarize our limited knowledge of the distribution of army ants in Illinois. All collections listed are represented by workers unless otherwise noted; voucher specimens of both species are housed in the Illinois Natural History Survey collections [INHS]. It is hoped this note will stimulate further studies upon army ants in Illinois.

*Neivamyrmex carolinensis* is the only army ant whose colonies consistently contain multiple queens (Rettenmeyer and Watkins, 1978, and pers. obs.). Rettenmeyer and Watkins (1978) suggest that multiple queens may aid in the survival of these subterranean colonies, because of the harsh environment this species inhabits.

### *Neivamyrmex carolinensis*

**ILLINOIS:** Pope Co., Dixon Springs State Park, 1 km NE of Dixon Springs, T13S R5E Sec 16, elev 150 m, 27-VI-1987, M.B. DuBois.

A raiding column was discovered (after dark) just beneath the soil surface (under a small stone) in proximity to an ultraviolet light which was being used to attract flying insects. Area was devoid of significant amounts of standing vegetation (mosses and grasses predominated) and was adjacent to deciduous forest.

This species has not previously been reported from Illinois nor

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<sup>2</sup>Current Address: 208 Oakwood Circle, Washington, Illinois 61571-2535.

surrounding states. Closest previous collections came from Kansas, Ohio, and Mississippi (Watkins, 1976, and pers. comm.). The Ohio record is based upon a literature record only (Watkins, 1985 and pers. comm.). Infrequent collections of this species in Illinois is not surprising in light of its small size (total worker body length always under 4 mm).

### *Neivamyrmex nigrescens*

ILLINOIS: Adams Co., Quincy, 3-IX-1936, Musselman (workers and males) [USNM - J. Watkins, pers. comm.]; Pulaski Co., N. Cairo, 28-X-1957, S.E. Ceglinski (males) [INHS]; Union Co., Anna, 5-IX-1932, L.C. Murphee [INHS].

This species has not been collected in Illinois since 1957, however, southern Illinois is well within its established range (Watkins, 1985).

### Key To Workers

Army ants can be recognized through the combination of characters listed below. To confirm the identity of specimens as army ants, consult either Smith (1947) or Creighton (1950).

Workers travel in distinct files while foraging or moving their nest. These files are usually observed at dusk or at night (rarely on overcast days) and never in direct sunlight. Nests are usually very messy earthworks with most individuals located in a large central cavity. Both petiole and postpetiole are always present in workers. Their compound eyes are extremely reduced and ocellus-like; true ocelli are always absent.

Once identified as army ants, a given species can be determined using Watkins (1976, 1985). The key below is presented to aid collectors encountering army ants in Illinois; it should never be used for other regions as numerous species (which do not occur in this area) have not been included.

- 1a. Antennal scape always significantly exceeding eye level (figure 1-A); posterior corners of head pointed (figure 1-B); basal surface of mandible rounded into masticatory surface (figure 3) ..... *N. nigrescens*
- 1b. Antennal scape never significantly exceeding eye level (figure 2-A); posterior corners of head more rounded (figure 2-B); basal surface of mandible forming a distinct corner or tooth at juncture with masticatory surface (figure 4) ..... 2
- 2a. Node of petiole subquadrate (figure 5); total body length of major workers always less than 4 mm ..... *N. carolinensis*
- 2b. Node of petiole elongate (figure 6); total body length of major workers always exceeding 4mm (not presently known to occur within the boundaires of Illinois) . . . . *N. opacithorax*

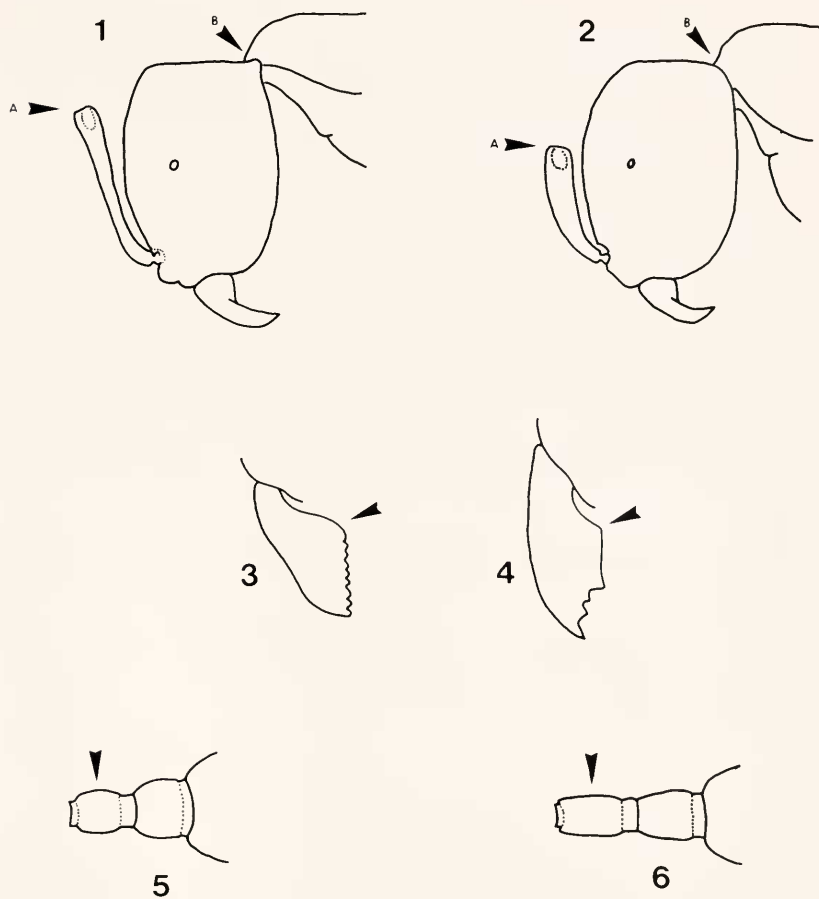


Figure 1. *Neivamyrmex nigrescens*, head, lateral view. A - Position of antennal scape in relation to compound eye level. B - Posterior head corner. Figure 2. *Neivamyrmex carolinensis*, head, lateral view. A - Position of antennal scape in relation to compound eye level. B - Posterior head corner. Figure 3. *Neivamyrmex nigrescens*, right mandible, frontal view. Arrow points to juncture of basal and masticatory surfaces. Figure 4. *Neivamyrmex carolinensis*, right mandible, frontal view. Arrow points to juncture of basal and masticatory surfaces. Figure 5. *Neivamyrmex carolinensis*, petiole, postpetiole, and anterior portion of gaster, dorsal view. Nodes depicted with dashed lines. Figure 6. *Neivamyrmex opacithorax*, petiole, postpetiole, and anterior portion of gaster, dorsal view. Nodes depicted with dashed lines. Scale on all figures varying.

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A new, revised, paperback edition of this valuable and standard text.

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This book addresses principles of insect ecology and their relation to insect pest management.

ADVANCES IN INSECT PHYSIOLOGY. Vol. 20. 1988. P.D. Evans and V.B. Wigglesworth, eds., Academic Press. 222 pp. \$29.00

Five contributions include: Turnover of photopransductive membrane in compound eyes and ocelli, Honey bee learning, Formation of a neurohaemal organ during insect embryogenesis, Thermoregulation and heat exchange, and Molecular targets of pyrethroid insecticides.